Application Interfaces

This section covers the following topics:

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Overview of Subprograms

Natural Security provides a number of application interfaces, that is, subprograms which may be used to access Natural Security maintenance and retrieval functions from outside the Natural Security library SYSSEC.

Use of the subprograms is controlled by the general option "Free Access to Functions via Application Interfaces" (which is described in the section Administrator Services).

On the Main Menu, you enter code "A" for "Administrator Services". The Administrator Services Menu will be displayed.

> **Note:**
> Access to Administrator Services may be restricted (as explained in the section Administrator Services).

On the Administrator Services Menu 2, you select "Application Interfaces". A list of the interface subprograms along with examples and explanatory online texts will be displayed.

The following subprograms are available:

Subprograms for Access Verification:

Subprogram	Function
NSC---L	Check if logon to a library is allowed.
NSC---P	Check if password is valid.
NSC----P	Check if password is valid, and change password.
NSCCHCK	Check if access to external object is allowed.
NSCDEF	Check if object is defined to Natural Security.

Subprograms for Maintenance:

Subprogram	Function
NSCFI	Maintenance functions for files.
NSCLI	Maintenance functions for libraries.
NSCMA	Maintenance functions for mailboxes.
NSCOB	Maintenance functions for external objects.
NSCUS	Maintenance functions for users.

Subprograms for Retrieval:

Subprogram	Function
NSCDA	Display library security profile.
NSCDA-C	Display command restrictions of library security profile.
NSCDA-P	Display security options, security limits and session parameters of library security profile.
NSCDA-S	Display statement restrictions of library security profile.
NSCDAU	Display special link security profile.
NSCDAUC	Display command restrictions of special link security profile.
NSCDAUP	Display security options, security limits and session parameters of special link security profile.
NSCDAUS	Display statement restrictions of special link security profile.
NSCDU	Display user security profile.
NSCXR	Cross-reference functions.
NSCFI, NSCLI, NSCMA, NSCOB, NSCUS	The display functions (function code "DI" - Display security profile) of these subprograms are considered to be retrieval functions.

Each subprogram that is to be used must be copied into the library in which it is to be executed, or into one of the steplibs concatenated to that library.

Note:
The subprograms cannot be invoked from any of the logon-related user exits described in the section User Exits.

Subprogram NSC---L

The subprogram NSC---L is used to check whether a specific user is allowed to log on to a specific library.

NSC---L is invoked as follows:

```
CALLNAT 'NSC---L' PAPPLID PUSERID PRC PPARM1
```

An example program PGM---L of how to invoke subprogram NSC---L, as well as an explanatory text TXT---L, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGM---L and TXT---L.

Subprogram NSC---P

The subprogram NSC---P is used to check if the password supplied together with a user ID is valid.

NSC---P is invoked as follows:

```
CALLNAT 'NSC---P' PUSERID PPASSWORD PUSER_NAME PRC
```

An example program PGM---P of how to invoke subprogram NSC---P, as well as an explanatory text TXT---P, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGM---P and TXT---P.

Note:
For the execution of this subprogram, the general option "Maximum Number of Logon Attempts" applies, that is, each invalid password will be considered an unsuccessful logon attempt.

Subprogram NSC----P

The subprogram NSC----P is used to check if the password supplied together with a user ID is valid; in addition, it is used to change the password.

NSC----P is invoked as follows:

```
CALLNAT 'NSC----P' PUSERID PPASSWORD(*) PUSER_NAME PPARM PRC
```

An example program PGM----P of how to invoke subprogram NSC----P, as well as an explanatory text TXT----P, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGM----P and TXT----P.

Note:
For the execution of this subprogram, the general option "Maximum Number of Logon Attempts" applies, that is, each invalid password will be considered an unsuccessful logon attempt.

Subprogram NSCCHCK

The subprogram NSCCHCK is used to check whether a specific user is allowed to access a specific external object.

NSCCHCK is invoked as follows:

```
CALLNAT 'NSCCHCK' PCLASSID PUSERID POBJID PACCESS-TYPE PRC PPARM1
```

An example program PGMCHCK of how to invoke subprogram NSCCHCK, as well as an explanatory text TXTCHCK, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMCHCK and TXTCHCK.

Subprogram NSCDA

The subprogram NSCDA is used to display the security profile of a library.

NSCDA is invoked as follows:

```
CALLNAT 'NSCDA' #PAPPLID #PPARM #PRC #PTYPE #PPARM1 #PPARM2 #PPARM3 #PTEXT(*)
```

An example program PGMDA of how to invoke subprogram NSCDA, as well as an explanatory text TXTDA, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDA and TXTDA.

Subprogram NSCDA-C

The subprogram NSCDA-C is used to display the Command Restrictions part of a library security profile.

NSCDA-C is invoked as follows:

```
CALLNAT 'NSCDA-C' #PAPPLID #PRC #PTYPE #PPARM1
```

An example program PGMDA-C of how to invoke subprogram NSCDA-C, as well as an explanatory text TXTDA-C, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDA-C and TXTDA-C.

Subprogram NSCDA-P

The subprogram NSCDA-P is used to display the Security Options, Security Limits and Session Parameters parts of a library security profile.

NSCDA-P is invoked as follows:

```
CALLNAT 'NSCDA-P' #PAPPLID #PRC #PTYPE #PPARM1 #POPRBS(*)
```

An example program PGMDA-P of how to invoke subprogram NSCDA-P, as well as an explanatory text TXTDA-P, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDA-P and TXTDA-P.

Subprogram NSCDA-S

The subprogram NSCDA-S is used to display the Statement Restrictions part of a library security profile.

NSCDA-S is invoked as follows:

```
CALLNAT 'NSCDA-S' #PAPPLID #PRC #PTYPE #PPARM1
```

An example program PGMDA-S of how to invoke subprogram NSCDA-S, as well as an explanatory text TXTDA-S, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDA-S and TXTDA-S.

Subprogram NSCDAU

The subprogram NSCDAU is used the security profile of a special link.

NSCDAU is invoked as follows:

```
CALLNAT 'NSCDAU' #PAPPLID #PUSERID #PRC #PPARM1 #PPARM2 #PPARM3 #PTEXT(*)
```

An example program PGMDAU of how to invoke subprogram NSCDAU, as well as an explanatory text TXTDAU, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDAU and TXTDAU.

Subprogram NSCDAUC

The subprogram NSCDAUC is used to display the Command Restrictions part of a special link security profile.

NSCDAUC is invoked as follows:

```
CALLNAT 'NSCDAUC' #PAPPLID #PUSERID #PRC #PPARM1
```

An example program PGMDAUC of how to invoke subprogram NSCDAUC, as well as an explanatory text TXTDAUC, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDAUC and TXTDAUC.

Subprogram NSCDAUP

The subprogram NSCDAUP is used to used to display the Security Options, Security Limits and Session Parameters parts of a special link security profile.

NSCDAUP is invoked as follows:

```
CALLNAT 'NSCDAUP' #PAPPLID #PUSERID #PRC #PPARM1 #POPRBS(*)
```

An example program PGMDAUP of how to invoke subprogram NSCDAUP, as well as an explanatory text TXTDAUP, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDAUP and TXTDAUP.

Subprogram NSCDAUS

The subprogram NSCDAUS is used to used to display the Statement Restrictions part of a special link security profile.

NSCDAUS is invoked as follows:

```
CALLNAT 'NSCDAUS' #PAPPLID #PUSERID #PRC #PPARM1
```

An example program PGMDAUS of how to invoke subprogram NSCDAUS, as well as an explanatory text TXTDAUS, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDAUS and TXTDAUS.

Subprogram NSCDEF

The subprogram NSCDEF is used to check whether a specific object is defined under Natural Security, i.e. whether a security profile for the object exists.

NSCDEF is invoked as follows:

```
CALLNAT 'NSCDEF' POBJID POBJTYPE PRC
```

An example program PGMDEF of how to invoke subprogram NSCDEF, as well as an explanatory text TXTDEF, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDEF and TXTDEF.

Subprogram NSCDU

The subprogram NSCDU is used to display a user security profile.

NSCDU is invoked as follows:

```
CALLNAT 'NSCDU' #PUSERID #PPARM #PRC #PPARM1 #PPARM2 #PPARM3 #PTEXT(*)
```

An example program PGMDU of how to invoke subprogram NSCDU, as well as an explanatory text TXTDU, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMDU and TXTDU.

Subprogram NSCFI

This subprogram is only available on mainframe computers, and it can only be applied to file security profiles. For DDM security profiles, you use the subprogram NSCLI (see below).

The subprogram NSCFI is used to perform maintenance/retrieval functions for file security profiles from outside of the library SYSSEC.

NSCFI is invoked as follows:

```
CALLNAT 'NSCFI' PFUNCTION PFILEID PFILEID2 PRC PPFKEY(*)
                PPARM PPARM1 PPARM2 PTEXT(*)
```

The sample programs PGMFI*nnn* showing how to invoke subprogram NSCFI, as well as explanatory texts TXTFI*nnn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMFI*nnn* and TXTFI*nnn*.

The first parameter (PFUNCTION) has to be filled with the function code for the desired function. The following functions are available:

Code	Function
AD	Add file
CL	Cancel link between library and file
CO	Copy file
DE	Delete file
DI	Display file
MO	Modify file (including all components of its security profile)
RE	Establish read-link between library and file
UP	Establish update-link between library and file

Subprogram NSCLI

The subprogram NSCLI is used to perform maintenance/retrieval functions for library security profiles from outside of library SYSSEC.

NSCLI is invoked as follows:

```
CALLNAT 'NSCLI' PFUNCTION PLIBID PLIBID2 PLIBTYPE PRC PPFKEY(*)
                PPARM PPARM1 PPARM2 PTEXT(*) PPARM3 PPARM4
                PPARM5 PPARM6 POPRB(*)
```

Example programs PGMLI*nnn* of how to invoke subprogram NSCLI, as well as explanatory texts TXTLI*nnn*, are provided in source form in the library SYSSEC.
Example programs PGMDDM*nn* of how to invoke NSCLI with function code "MD", as well as explanatory texts TXTDDM*nn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMLI*nnn*, TXTLI*nnn*, PGMDDM*nn* and TXTDDM*nn*.

The first parameter (PFUNCTION) has to be filled with the function code for the desired function. The following functions are available:

Code	Function
AD	Add library
CL	Cancel link between user and library
CO	Copy library
DE	Delete library
DI	Display library
DL	Display special link between user and library
DM	Display allowed/disallowed modules
ET	Get library ID via ETID
LK	Link user to library
MD	Maintain DDM profile; see also below (this function is not available on mainframes)
MM	Modify allowed/disallowed modules
MO	Modify library (including all components of its security profile)
SL	Establish special link between user and library
TL	Temporarily lock link between user and library
UC	Update all "modified" command processors in the library

If PFUNCTION is filled with function code "MD", the PSUBFUNC part of the parameter PPARM has to be filled with the code for the desired subfunction. The following subfunctions are available:

Code	Subfunction
AD	Add DDM profile
CL	Cancel link between library and DDM profile
CO	Copy DDM profile
DE	Delete DDM profile
DI	Display DDM profile
MO	Modify DDM profile
RE	Establish read-link between library and DDM profile
UP	Establish update-link between library and DDM profile

Subprogram NSCMA

The subprogram NSCMA is used to perform maintenance/retrieval functions for mailbox security profiles from outside of the library SYSSEC.

NSCMA is invoked as follows:

```
CALLNAT 'NSCMA' PFUNCTION POBJID POBJID2 PRC PPFKEY(*)
                PPARM PPARM1 PPARM2 PTEXT1(*) PTEXT2(*)
```

Example programs PGMMA*nnn* showing how to invoke subprogram NSCMA, as well as explanatory texts TXTMA*nnn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMMA*nnn* and TXTMA*nnn*.

The first parameter (PFUNCTION) has to be filled with the function code for the desired function. The following functions are available:

Code	Function
AD	Add mailbox
CO	Copy mailbox
DE	Delete mailbox
DI	Display mailbox
MO	Modify mailbox (including all components of its security profile)
RE	Rename mailbox

Subprogram NSCOB

The subprogram NSCOB is used to perform maintenance/retrieval functions for external object security profiles from outside of library SYSSEC.

NSCOB is invoked as follows:

```
CALLNAT 'NSCOB' PFUNCTION PCLASSID POBJID POBJID2 PRC PPFKEY(*)
                PPARM PPARM1 PPARM2 PTEXT(*)
```

Example programs PGMOB*nnn* of how to invoke subprogram NSCOB, as well as explanatory texts TXTOB*nnn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMOB*nnn* and TXTOB*nnn*.

The first parameter (PFUNCTION) has to be filled with the function code for the desired function. The following functions are available:

Code	Function
AD	Add external object
CL	Cancel link between user and external object
CO	Copy external object
DE	Delete external object
DI	Display external object
DL	Display link between user and external object
LK	Link user to external object
MO	Modify external object (including all components of its security profile)

Subprogram NSCUS

The subprogram NSCUS is used to perform maintenance/retrieval functions for user security profiles from outside of library SYSSEC.

Note:
NSCUS cannot be used for private libraries which may be attached to user security profiles; for maintenance/retrieval of private libraries, you use subprogram NSCLI.

NSCUS is invoked as follows:

```
CALLNAT 'NSCUS' PFUNCTION PUSERID PUSERID2 PRC PPFKEY(*)
                PPARM PPARM1 PPARM2 PTEXT(*) PPARM3 PPARM4
```

Example programs PGMUS*nnn* of how to invoke subprogram NSCUS, as well as explanatory texts TXTUS*nnn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMUS*nnn* and TXTUS*nnn*.

The first parameter (PFUNCTION) has to be filled with the function code for the desired function. The following functions are available:

Code	Function
AD	Add user
AM	Multiple add user
CO	Copy user
DE	Delete user
DI	Display user
EG	Edit group members
ET	Get user ID via ETID
MO	Modify user (including all components of his/her security profile)

For function code "EG", the following subfunctions are available:

Code	Subfunction
AD	Add users to a group
DE	Delete users from a group
LI	List group members

Subprogram NSCXR

The subprogram NSCXR is used to perform cross-reference functions for security profiles from outside of library SYSSEC.

NSCXR is invoked as follows:

```
CALLNAT 'NSCXR' POBJ-TYPE POBJ-ID PLINK-ID PRC SUB-TYPE PPARM PPARM2(*)
```

Example programs PGMXR*nnn* of how to invoke subprogram NSCXR, as well as explanatory texts TXTXR*nnn*, are provided in source form in the library SYSSEC.

The individual CALLNAT parameters are explained in the source codes of PGMXR*nnn* and TXTXR*nnn*.

The first parameter (POBJ-TYPE) has to be filled with the code for the type of object for which a function is to be performed:

Code	Object Type
US	User
LI	Library
DD	DDM (this object type is not available on mainframes)
FI	File (this object type is only available on mainframes)
MA	Mailbox
LE	Logon error record
LR	Logon record
ST	Steplib
UT	Utility
CP	Command processor
PE	Predict external object (this object type is only available if Predict is installed)
PF	Predict function (this object type is only available if Predict is installed)
PL	Predict 3GL library (this object type is only available if Predict is installed)
PO	Predict documentation object (this object type is only available if Predict is installed)
SF	System file

For the individual object types listed above, the following functions can be performed by filling the parameter SUB-TYPE with one of the following function codes:

Function Available for Every Object Type:

Code	Function
TR	Translates the 2-character object-type code into the corresponding object type.

Functions Available for a User (US):

Code	Function
*	List all users.
A	List all users of type ADMINISTRATOR.
P	List all users of type PERSON.
M	List all users of type MEMBER.
T	List all users of type TERMINAL.
G	List all users of type GROUP.
B	List all users of type BATCH.
GR	List all groups the user belongs to.
GP	List all privileged groups the user belongs to.
GM	List all users contained in the group.
BU	List all users in whose security profiles the batch user ID is specified.
NI	Retrieve the user ID belonging to a specified user name.
LA	List all libraries available to the user.
LL	List all libraries to which the user is linked.
LD	List all libraries to which the user is linked directly.
LG	List all libraries to which the user is linked by means of a group.
LP	List all libraries to which the user is linked by means of a privileged group.
OW	List all security profiles owned by the user.
DD	List all DDMs available to the user (this function is not available on mainframes).
DL	List all DDMs available to the user by means of a special link (this function is not available on mainframes).
FI	List all files to which the user's private library is linked (this function is only available on mainframes).
UT	List all utility profiles which apply to the user.

Functions Available for a Library (LI):

Code	Function
*	List all libraries and users' private libraries.
L	List all libraries.
U	List all users' private libraries.
NI	Retrieve the library ID belonging to a specified library name.
DD	List all DDMs to which the library is linked (this function is not available on mainframes).
LD	List all DDMs to which the library is linked by means of a special link (this function is not available on mainframes).
FI	List all files to which the library is linked (this function is only available on mainframes).
NO	List allowed/disallowed modules.
US	List all users linked to the library.
UT	List all utility profiles which apply to the library.
CP	List all command processors for the library that have a specific status.

Functions Available for a DDM (DD):

Code	Function
*	List all defined DDMs (that is, for which security profiles exist).
UN	List all undefined DDMs (that is, for which no security profiles exist).
DD	List all defined and undefined DDMs.
P	List all DDMs with external status PUBLIC.
A	List all DDMs with external status ACCESS.
U	List all DDMs with external status PRIVATE.
ND	List all DDM security profiles for which no corresponding DDMs exist.
LI	List all libraries which are linked to the DDM.
US	List all users which are linked to the DDM.
SL	List all DDM definitions in special link security profiles.
X	List all DDM definitions in library and special link security profiles.

Functions Available for a File (FI):

Code	Function
PU	List files of type PUBLIC.
AC	List files of type ACCESS.
UP	List files of type PRIVATE.
DD	List files with existing DDM.
ND	List files with no DDM.
UN	List undefined files.
LI	List libraries to which the specified file is linked.
US	List users whose private libraries are linked to the specified file.

Functions Available for a Mailbox (MA):

Code	Function
LI	List all libraries to which the mailbox is assigned.
US	List all users to which the mailbox is assigned.

Functions Available for Logon Error Records (LE):

Code	Function
P	List logon error records, in order of TP user IDs.
T	List logon error records, in order of terminal IDs.

Functions Available for Logon Records (LR):

Code	Function
L	List logon records, in order of library IDs.
U	List logon records, in order of user IDs.
LX	List logon records to undefined libraries (in order of library IDs).
UX	List logon records of undefined users (in order of user IDs).

Functions Available for Steplibs (ST):

Code	Function
*	List all steplibs.
LK	List protected steplibs.
NN	List public steplibs.
SL	List special linked steplibs.

Functions Available for Utilities (UT):

Code	Function
LI	List all library-specific utility profiles defined for the utility.
US	List all user-specific utility profiles defined for the utility.
UT	List all utility profiles defined for the utility.
blank	List all utility profiles defined for all utilities.

Functions Available for Command Processors (CP):

For a command processor, NSCXR will list all libraries and users for the command processor (without any SUB-TYPE specification being required).

Functions Available for Predict Objects (PE, PF, PL, PO):

For each of the four Predict object types, NSCXR will list all objects of that type (without any SUB-TYPE specification being required).

Functions Available for System Files (SF):

Code	Function
FN	List all libraries of the current FNAT system file which are not defined in Natural Security.
FU	List all libraries of the current FUSER system file which are not defined in Natural Security.